

**INF3705**

( 471927)

May/June 2016

**ADVANCED SYSTEMS DEVELOPMENT**

Duration 2 Hours

100 Marks

**EXAMINERS .**

FIRST

SECOND

EXTERNAL

PROF A COLEMAN

DR VZ HORNER

PROF R KEKWALETWE

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Closed book examination

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This examination question paper consists of 6 pages plus instructions for the completion of a mark-reading sheet

**INSTRUCTIONS**

- 1** Answer section A on the mark-reading sheet, and the rest of the questions in the answer book
- 2** All rough work must be done in the answer book
- 3** The mark for each question is given in brackets next to the question
- 4** Please answer the questions in the order in which they have been set. If you wish to leave out a question temporarily and come back to it later, leave sufficient space for it in your answer book

**( TURN OVER )**

**SECTION A: MULTIPLE-CHOICE QUESTIONS [50 MARKS\*\*]**

- 1 The purpose of performance testing is to-----.
  - 1 To test the response rate of the system
  - 2 To test the number of transactions that the system can handle simultaneously
  - 3 To test during development
  - 4 All of the above
- 2 Which of the following is appropriate for the incremental model of software development?
  - 1 When developments methods are flexible
  - 2 When the process of software development is well defined
  - 3 When a core product is required quickly
  - 4 All of the above
- 3 The agile model of software development is most appropriate for the following situation
  - 1 When developments methods are flexible
  - 2 When the process of software development is well defined
  - 3 When requirements are well known in advance
  - 4 All of the above
- 4 Which of the following needs to be assessed during unit testing?
  - 1 Algorithmic performance
  - 2 Code stability
  - 3 To test during development
  - 4 All of the above
- 5 What is the purpose of load testing?
  - 1 To test the response rate of the system
  - 2 To test the number of transactions that the system can handle simultaneously
  - 3 To test during development
  - 4 All of the above
- 6 Usability testing involves one of the following
  - 1 Deployment testing
  - 2 Requirements validation
  - 3 Load testing
  - 4 All of the above

- 7 As a system developer, which of the following are elements to be considered in systems design?
- 1 Architecture, data and interfaces
  - 2 Data interfaces and project scope
  - 3 Systems models
  - 4 All of the above
- 8 Which one of the following are major concerns to software engineering
- 1 Architecture, data and interfaces
  - 2 Data interfaces and project scope
  - 3 Systems models
  - 4 All of the above
- 9 An architectural style encompasses which of the following elements?
- 1 Constraints
  - 2 Set of components
  - 3 Semantic models
  - 4 All of the above
- 10 To determine the architectural style or combination of styles that best fit a proposed system, requirements engineering is used to uncover \_\_\_\_\_
- 1 Algorithmic complexity
  - 2 Characteristics and constraints
  - 3 Control and data
  - 4 Design patterns
- 11 Which of the following are elements of systems requirements?
- 1 Architecture, data and interfaces
  - 2 Data interfaces and project scope
  - 3 Systems models
  - 4 All of the above
- 12 Which of the following is preferable with regard to software modules?
- 1 Low cohesion and high coupling
  - 2 High cohesion and high coupling
  - 3 High cohesion and low coupling
  - 4 It depends on the situation
- 13 Cyber security dealing with secrecy or confidentiality threats is referred to as -----
- 1 Unauthorised modification of data
  - 2 Denial of access to data and services
  - 3 Unauthorised viewing of data
  - 4 All of the above

14 Integrity threats refer to one of the following

- 1 Unauthorised modification of data
- 2 Denial of access to data and services
- 3 Unauthorised viewing of data
- 4 All of the above

15 Denial of access or availability threats refer to

- 1 Unauthorised modification of data
- 2 Denial of access to data and services
- 3 Unauthorised viewing of data
- 4 All of the above

16 The following can be classified as true of the Model–View–Controller (MVC) architectural pattern

- 1 It has three components
- 2 Has clients and servers
- 3 It is a sequential model of processing
- 4 None of the above

17 Prototyping involves development of

- 1 Initial demonstration of concepts
- 2 A final product
- 3 A stable product
- 4 Beta version of the product

18 Which of the following is an attribute of a dependable software engineering process?

- 1 Documentable
- 2 Standardised
- 3 Auditable
- 4 All of the above

19 Redundancy and diversity are fundamental strategies in the dependability of a system. Which of the following is an example of diversity?

- 1 A spare/extra capacity
- 2 Object oriented design
- 3 Avoiding a single point of failure
- 4 All of the above

20 Which of the following exploits on reusable components in its design?

- 1 A backup mechanism
- 2 Object oriented design
- 3 Avoiding a single point of failure
- 4 All of the above

21 Socio -Technical systems is made up of different components including\_\_\_\_\_

- 1 Equipment
- 2 Operating system
- 3 Society
- 4 All of the above

22 Which of the following influences the general reliability of a system?

- 1 Hardware reliability
- 3 Software reliability
- 4 Operator reliability
- 4 All of the above

23 Which of the following is not part of software engineering ethics?

- 1 Confidentiality
- 2 Competence
- 3 Intellectual property rights
- 4 User Interface

24 Why is it sometimes necessary to bypass the normal change management system and make urgent change to a system?

- 1 To satisfy management
- 2 To satisfy customer
- 3 To repair a serious system fault
- 4 None of the above

25 Which of the following factor is not used to assess applications evolution?

- 1 Documentation
- 2 Data
- 3 Performance
- 4 Language

**SECTION B: STRUCTURED QUESTIONS [50 MARKS]**

**Answer to section B.**

**QUESTION 1 [10]**

With the aid of diagram explain software system procurement processes in IT organizations

**QUESTION 2 [10]**

You have been employed as a system developer in Microsoft Explain to your new team members the following process activities, specification, validation and evolution

**QUESTION 3 [10]**

What are the fundamental concepts of user and system requirements and why must these requirements be written in different forms?

**QUESTION 4 [10]**

Members of your software development team think that agile methods should be based on principles Explain the principles of agile methods to the team

**QUESTION 5 [10]**

As a system developer, your organisation requires you to make a decision on system architecture Explain to your organization members what decisions have to be made about the system during the architectural design process?

**PART 1: (GENERAL/ALGEMEEN) DEEL 1**

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INITIALS AND SURNAME  
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DATE OF EXAMINATION  
DATUM VAN EKSAMEN

PAPER NUMBER  
VRAESTELNOMMER

EXAMINATION CENTRE (E.G. PRETORIA)  
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For use by examination invigilator  
Vir gebruik deur eksamenopsiener

**IMPORTANT**

1. USE ONLY AN HB PENCIL TO COMPLETE THIS SHEET
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**PART 2: (ANSWERS/ANTWOORDE) DEEL 2**

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